

Notice of Allowability

Application No.

10/750,941

Examiner

Irakli Kiknadze

Applicant(s)

FRANCKE, TOM

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Interview summary of 09/22/2005.
2. ☒ The allowed claim(s) is/are 1-44.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 1/5/04; 8/3/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 10252005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with John A. Castellano (Reg. No.35, 094) on September 22, 2005.

3. The application has been amended as follows:

Claim 36, in lines 1, " wherein said apparatus comprises " should read -- wherein said apparatus further comprises --.

Allowable Subject Matter

4. Claims 1-44 are allowed.

5. The following is an examiner's statement of reasons for allowance:

Claims 1, 2, 13 and 16-36 are allowed because prior art fails to teach or make obvious an apparatus for obtaining tomographic data of an object comprising:

a radiation detector comprising a two-dimensional array of line detectors, each having a detection-sensitive area directed towards a divergent radiation source and being provided for one-dimensional imaging of radiation entering the detection-sensitive area; and

a moving device moving the divergent radiation source and the radiation detector relative the object helically around a second axis being essentially perpendicular to an axis of symmetry and the direction of a first dimension, to obtain tomographic data of the object, wherein the helical movement includes a rotation less than essentially the sum of one full revolution and an opening angle, and a distance along the second axis corresponding to a distance between two adjacent detectors in a column of the two-dimensional array as claimed in combination with all elements of claim 1. Claims 2, 13 and 16-36 are allowed by virtue of their dependence.

Claims 3-12, 14 and 15 are allowed because prior art fails to teach or make obvious an apparatus for obtaining tomographic, tomosynthesis and still picture data of an object comprising:

a radiation detector comprising a two-dimensional array of line detectors, each having a detection-sensitive area directed towards a divergent radiation source and being provided for one-dimensional imaging of radiation entering the detection-sensitive area; and a moving device for:

moving the divergent radiation source and the radiation detector relative the object helically around a second axis being essentially perpendicular to the axis of symmetry and the direction of a first dimension, to obtain tomographic data of the object;

moving the divergent radiation source and the radiation detector relative the object linearly in a plane perpendicular to the axis of symmetry to obtain tomosynthesis data of the object; and

moving the divergent radiation source and the radiation detector relative the object linearly along the second axis a distance corresponding to a distance between two adjacent detectors in a column of the two-dimensional array to obtain still picture data of the object as claimed in combination with all elements of claim 3. Claims 4-12, 14 and 15 are allowed by virtue of their dependence.

Claim 37 is allowed because prior art fails to teach or make obvious a method for obtaining tomographic data of an object comprising steps of:

detecting the radiation by a radiation detector comprising a two-dimensional array of line detectors, each having a detection-sensitive area directed towards a divergent radiation source and being provided for one-dimensional imaging of radiation entering the detection- sensitive area; wherein

the divergent radiation source and the radiation detector are moved relative the object helically around a second axis being essentially perpendicular to an axis of symmetry and the direction of the first dimension, while detecting by the radiation detector to obtain tomographic data of the object, wherein the helical movement includes a rotation less than essentially the sum of one full revolution and the opening angle, and a distance along the second axis corresponding to a distance between two adjacent detectors in a column of the two-dimensional array as claimed in combination with all elements of claim 37.

Claim 38 is allowed because prior art fails to teach or make obvious a method for obtaining tomographic data of an object comprising steps of:

detecting the radiation by a radiation detector comprising a two-dimensional array of line detectors, each having a detection-sensitive area directed towards a divergent radiation source and being provided for one-dimensional imaging of radiation entering the detection-sensitive area; wherein:

the divergent radiation source and the radiation detector are moved relative the object helically around a second axis being essentially perpendicular to the axis of symmetry and the direction of a first dimension, to obtain tomographic data of the object;

the divergent radiation source and the radiation detector are moved relative the object linearly in a plane perpendicular to the axis of symmetry to obtain tomosynthesis data of the object; and

the divergent radiation source and the radiation detector are moved relative the object linearly along the second axis a distance corresponding to a distance between two adjacent detectors in a column of the two-dimensional array, while detecting by the radiation detector, to obtain still picture data of the object as claimed in combination with all elements of claim 38.

Claim 39 is allowed because prior art fails to teach or make obvious an apparatus for obtaining tomographic and tomosynthesis data of an object comprising:

a radiation detector comprising a two-dimensional array of line detectors, each having a detection-sensitive area directed towards a divergent radiation source and being provided for one-dimensional imaging of radiation entering the detection-sensitive area; and a moving device for:

moving the divergent radiation source and the radiation detector relative the object helically around a second axis being essentially perpendicular to the axis of symmetry and the direction of a first dimension, to obtain tomographic data of the object;

moving the divergent radiation source and the radiation detector relative the object linearly in a plane perpendicular to the axis of symmetry to obtain tomosynthesis data of the object as claimed in combination with all elements of claim 39.

Claims 40 allowed because prior art fails to teach or make obvious an apparatus for obtaining tomographic and still picture data of an object comprising:

a radiation detector comprising a two-dimensional array of line detectors, each having a detection-sensitive area directed towards a divergent radiation source and being provided for one-dimensional imaging of radiation entering the detection-sensitive area; and a moving device for:

moving the divergent radiation source and the radiation detector relative the object helically around a second axis being essentially perpendicular to the axis of symmetry and the direction of a first dimension, to obtain tomographic data of the object; and

moving the divergent radiation source and the radiation detector relative the object linearly along the second axis a distance corresponding to a distance between two adjacent detectors in a column of the two-dimensional array to obtain still picture data of the object as claimed in combination with all elements of claim 40.

Claims 41, 43 and 44 are allowed because prior art fails to teach or make obvious an apparatus for obtaining tomographic data of an object comprising:

a radiation detector comprising a two-dimensional array of line detectors, each having a detection-sensitive area directed towards a divergent radiation source and being provided for one-dimensional imaging of radiation entering the detection-sensitive area; and

a moving device moving the divergent radiation source and the radiation detector relative the object helically around a second axis being essentially perpendicular to an axis of symmetry and the direction of a first dimension, to obtain tomographic data of the object, wherein the helical movement includes a rotation least the sum of a half revolution and an opening angle, and a distance along the second axis corresponding to a distance between two adjacent detectors in a column of the two-dimensional array as claimed in combination with all elements of claim 41. Claims 43 and 44 are allowed by virtue of their dependence.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Taguchi (US Patent Application Publication 2002/0141531 A1),

Oikawa (US Patent 6,587,539 B2) and Hu et al. (US patent 5,430,783) teach the reconstruction methods for helical scanning computed tomography.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze
October 28, 2005

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EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER